

MOSQUITO CONTROL PESTICIDE EXPOSURE AND HOW TO RESPOND TO PUBLIC CONCERNS

Presented By

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at the

Arbovirus Surveillance Workshop

Friday, May 2, 2003

Risk Communication Issues

The expert responds to hazard;
The public responds to outrage.

-Peter Sandman

What triggers Outrage

Acceptable

Voluntary

Natural

Familiar

Knowable

Continual

Easily Understood

Self controlled

Unacceptable

Forced

Man made

Esoteric

Confidential

Catastrophic

Difficult

Outside personal
control

Toxicity Categories

LD and LC₅₀s – Amount of chemical to kill 50% of an animal population

Category	Signal Word	LD ₅₀		LC ₅₀
		Oral mg/kg	Dermal mg/kg	Inhalation mg/L
I	Danger	< 50	<200	<.2
II	Warning	50 thru 500	200 thru 2,000	.2 thru 2
III	Caution	<500 thru 5,000	2,000 thru 20,000	2 thru 20
IV	Caution	>5,000	>20,000	>20

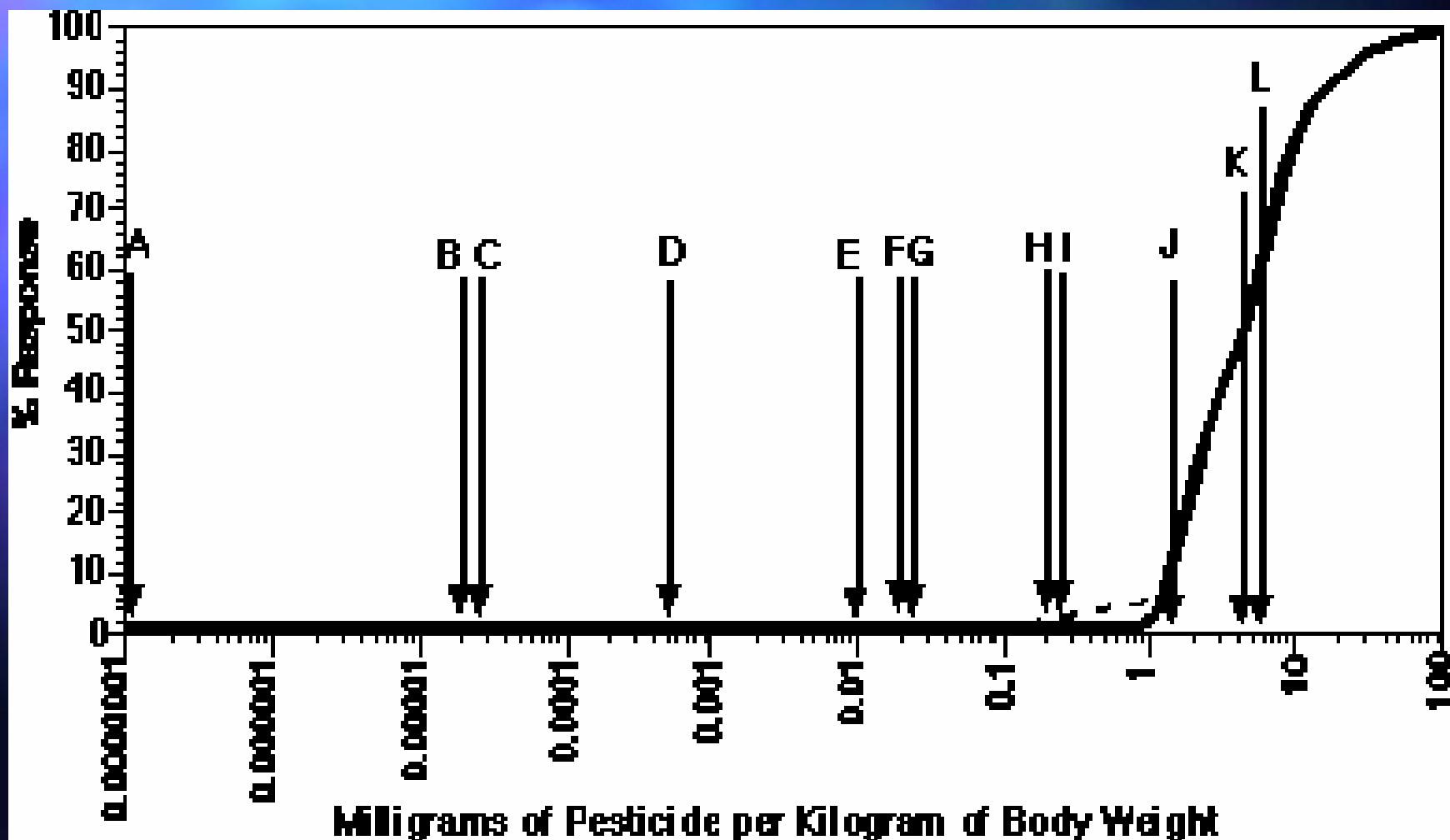
Toxicity Categories

Category	Signal Word	Eye Effects	Skin Effects
I	Danger	Corrosive, corneal opacity not reversible within 7 days	Corrosive
II	Warning	Corneal opacity reversible within 7 days; irritation persisting for 7 days	Severe irritation at 72 hrs
III	Caution	No corneal opacity; irritation reversible within 7 days	Moderate irritation in 72 hrs
IV	Caution	No irritation	Mild or slight irritation at 72 hrs.

PESTICIDE DOSE RESPONSE CURVE

No observable effect levels = A, B, C, D, E, F, G, H, or I

Acute or Chronic Toxicity = J, K, or L



DEET

Toxicology

- ✗ LD_{50} oral = 2,000 to 3,000 mg/kg
- ✗ LD_{50} dermal = 3,150 mg/kg
- ✗ Mildly irritating to the eyes and skin
- ✗ Quickly metabolized in the body and completely eliminated in 1-3 days
- ✗ Serious adverse effects are infrequent and are generally associated with gross over use of product

Efficacy of DEET Repellents

N Engl J Med, Vol. 347, No. 1

Chemical	% Active	Mean Protection Time (hours)
DEET	23.8	301.5
DEET	20	234.4
DEET	6.65	112.4
Soybean Oil	2	94.6
DEET	4.75	88.4
IR3535	7.5	22.9
Citronella	10	19.7

Bacillus Thuringiensis (var. israelensis)*

LD₅₀ oral = 2,650 mg/kg

LD₅₀ dermal = 6,280 mg/kg

Mildly irritating to the eye

No chronic effects

Bacterial toxin specifically targeted to receptors
in the midgut of target insect

May last up to 30 days in briquette form

* Formulated product

Malathion

LD₅₀ oral = 1,000 to 10,000 mg/kg

LD₅₀ dermal = > 4,000 mg/kg

Categorized as "Slightly toxic"

Acute symptoms occur at very high intake: headache, dizziness, blurred vision, etc.

Resmethrin

LD₅₀ oral = 2,500 mg/kg

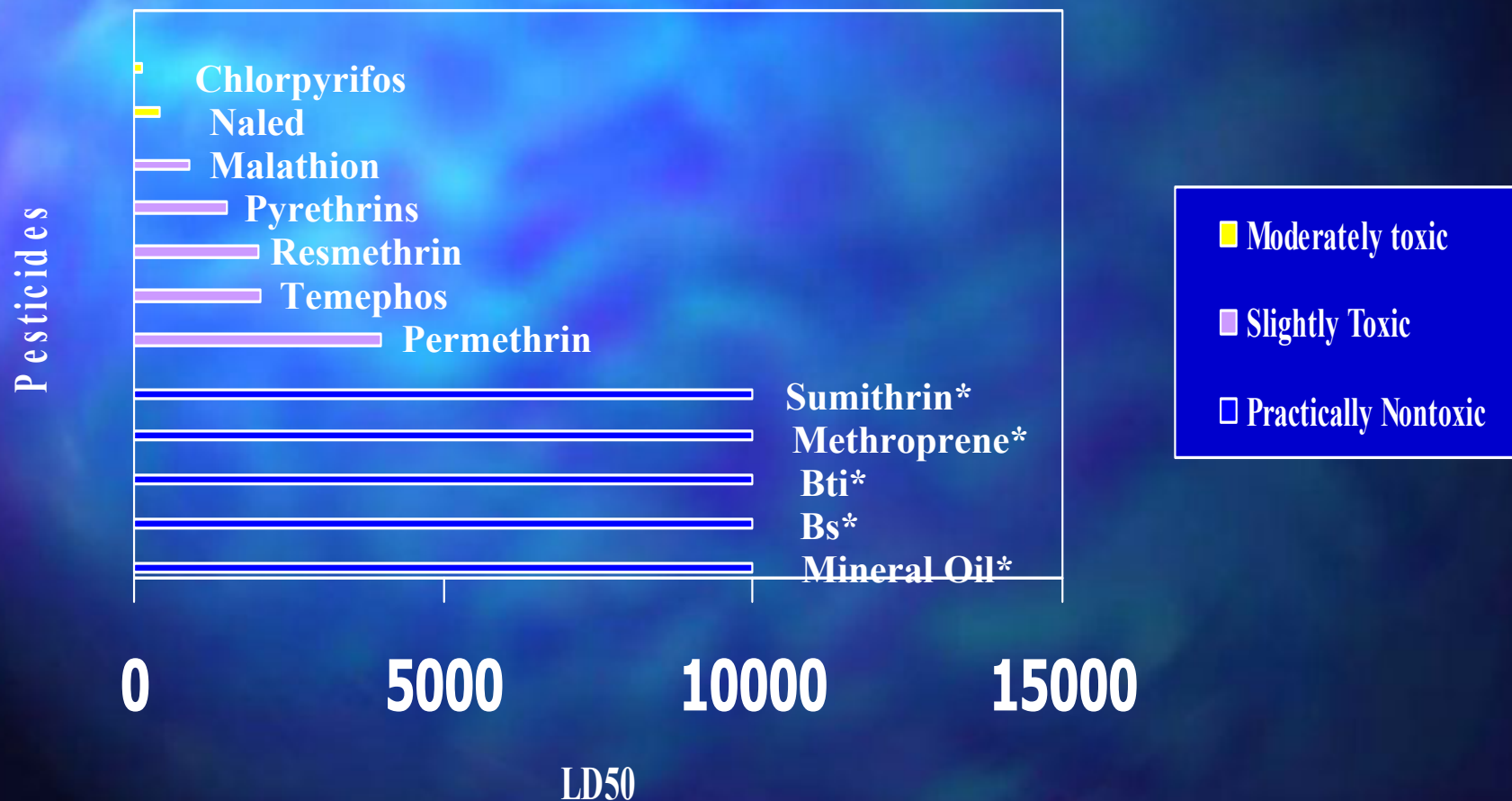
LD₅₀ dermal = > 3,000 mg/kg

LC₅₀ inhalation = 9.49 mg/kg

Chronic effects include changes in liver
and thyroid at high levels

Catagorized as "Slightly Toxic"

Table 1: Selected Pesticides for Mosquito Control: Hazard Class and Toxicity



Online Resources

Toxline

<http://toxnet.nlm.nih.gov>

EXTOXNET

<http://ace.orst.edu/info/extoxnet>

EPA

<http://www.epa.gov/pesticides/>

<http://www.epa.gov/iris/>

Outrage Reduction

Pay attention to unvoiced concerns or underlying motives

Share control

Stake out the middle not the extremes

Acknowledge prior misbehaviors or current problems

Discuss achievements with humility

Last Tips

1. Listen (SOAR)
2. Be Fair
3. Motivate people
4. Engineer alternatives
5. Protect self esteem